

SEQUENCE LISTING

<110> Rybak, Susanna M.
 Newton, Dianne L.
 The United States of America
 as represented by The Secretary of the
 Department of Health and Human Services

<120> Recombinant Anti-Tumor RNase

<130> 015280-343100US

<140> US 09/622,613

<141> 2000-08-17

<150> US 60/079,751

<151> 1998-03-27

<150> WO PCT/US99/06641

<151> 1999-03-26

<160> 43

<170> PatentIn Ver. 2.0

<210> 1

<211> 312

<212> DNA

<213> Rana pipiens

<220>

<221> CDS

<222> (1)..(312)

<223> ribonuclease (RaPLR1)

<400> 1

caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat	48
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp	
1 5 10 15	
gtt gac tgt aat att atc atg tca aca aac ttg ttc cac tgc aag gac	96
Val Asp Cys Asn Ile Ile Met Ser Thr Asn Leu Phe His Cys Lys Asp	
20 25 30	
aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc tgt	144
Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys	
35 40 45	
aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt tat	192
Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr	
50 55 60	
ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta aag	240
Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys	
65 70 75 80	
aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca gta	288
Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val	
85 90 95	
cat ttc gtg ggt gtc gga cat tgc	312

His Phe Val Gly Val Gly His Cys
100

<210> 2
<211> 104
<212> PRT
<213> Rana pipiens

<400> 2
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
1 5 10 15
↓
Val Asp Cys Asn Ile Ile Met Ser Thr Asn Leu Phe His Cys Lys Asp
20 25 30
Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
35 40 45
Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr
50 55 60
Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
65 70 75 80
Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
85 90 95
His Phe Val Gly Val Gly His Cys
100

<210> 3
<211> 312
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Met23Leu substitution
(recombinant RaPLR1 Met23Leu)

<220>
<221> CDS
<222> (1)..(312)
<223> RaPLR1 Met23Leu

<400> 3
caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat 48
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
1 5 10 15
ggt gac tgt aat aat atc ctg tca aca aac ttg ttc cac tgc aag gac 96
Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys Asp
20 25 30
aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc tgt 144
Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
35 40 45
aaa gga att ata gcc tcc aaa aat gtg tta act acc ttt gag ttt tat 192

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Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Phe Glu Phe Tyr
   50                      55                      60

ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta aag   240
Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
   65                      70                      75                      80

aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca gta   288
Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
                      85                      90                      95

cat ttc gtg ggt gtc gga cat tgc   312
His Phe Val Gly Val Gly His Cys
      100

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<210> 4
<211> 104
<212> PRT
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence:Rana pipiens
      ribonuclease with Met23Leu substitution
      (recombinant RaPLR1 Met23Leu)

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<400> 4
Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp
   1                      5                      10                      15

Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys Asp
      20                      25                      30

Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys
      35                      40                      45

Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Phe Glu Phe Tyr
   50                      55                      60

Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
   65                      70                      75                      80

Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
      85                      90                      95

His Phe Val Gly Val Gly His Cys
      100

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<210> 5
<211> 315
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence:Rana pipiens
      ribonuclease with Met at position 1 (recombinant
      Met(-1) RaPLR1)

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<220>
<221> CDS

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<222> (1)..(315)

<223> Met(-1) RaPLR1

<400> 5

atg	caa	gac	tgg	ctt	acg	ttt	cag	aag	aag	cac	ctg	aca	aac	acc	cgg	48
Met	Gln	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg	
1				5					10					15		

gat	gtt	gac	tgt	aat	aat	atc	atg	tca	aca	aac	ttg	ttc	cac	tgc	aag	96
Asp	Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys	
			20					25					30			

gac	aag	aac	act	ttt	atc	tat	tca	cgt	cct	gag	cca	gtg	aag	gcc	atc	144
Asp	Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile	
		35					40					45				

tgt	aaa	gga	att	ata	gcc	tcc	aaa	aat	gtg	tta	act	acc	tct	gag	ttt	192
Cys	Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe	
	50					55				60						

tat	ctc	tct	gat	tgc	aat	gta	aca	agc	agg	cct	tgc	aag	tat	aaa	tta	240
Tyr	Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu	
	65				70				75						80	

aag	aaa	tca	act	aat	aca	ttt	tgt	gta	act	tgt	gag	aat	caa	gct	cca	288
Lys	Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro	
				85					90					95		

gta	cat	ttc	gtg	ggg	gtc	gga	cat	tgc								315
Val	His	Phe	Val	Gly	Val	Gly	His	Cys								
			100					105								

<210> 6

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Met at position 1 (recombinant
Met(-1) RaPLR1)

<400> 6

Met	Gln	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg
1				5					10					15	

Asp	Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys
			20					25					30		

Asp	Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile
		35					40					45			

Cys	Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe
	50					55				60					

Tyr	Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu
	65				70				75						80

Lys	Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro
				85					90					95	

Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 7
 <211> 315
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 and Met24Leu
 substitution (recombinant Met(-1) RaPLR1 Met23Leu)

<220>
 <221> CDS
 <222> (1)..(315)
 <223> Met(-1) RaPLR1 Met23Leu

<400> 7
 atg caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg 48
 Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15
 gat gtt gac tgt aat aat atc ctg tca aca aac ttg ttc cac tgc aag 96
 Asp Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys
 20 25 30
 gac aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc 144
 Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45
 tgt aaa gga att ata gcc tcc aaa aat gtg tta act acc ttt gag ttt 192
 Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Phe Glu Phe
 50 55 60
 tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta 240
 Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80
 aag aaa tca act att aca ttt tgt gta act tgt gag aat caa gct cca 288
 Lys Lys Ser Thr Ile Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95
 gta cat ttc gtg ggt gtc gga cat tgc 315
 Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 8
 <211> 105
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 and Met24Leu
 substitution (recombinant Met(-1) RaPLR1 Met23Leu)

<400> 8

Met Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15
 Asp Val Asp Cys Asn Asn Ile Leu Ser Thr Asn Leu Phe His Cys Lys
 20 25 30
 Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45
 Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Phe Glu Phe
 50 55 60
 Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80
 Lys Lys Ser Thr Ile Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95
 Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 9
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Rana pipiens
 ribonuclease with (His)6 tag, Met at position 7
 and Met30Leu substitution (recombinant Met(-1)
 RaPLR1 Met23Leu-(His)6)

<400> 9
 His His His His His His Met Gln Asp Trp Leu Thr Phe Gln Lys Lys
 1 5 10 15
 His Leu Thr Asn Thr Arg Asp Val Asp Cys Asn Asn Ile Leu Ser Thr
 20 25 30
 Asn Leu Phe His Cys Lys Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro
 35 40 45
 Glu Pro Val Lys Ala Ile Cys Lys Gly Ile Ile Ala Ser Lys Asn Val
 50 55 60
 Leu Thr Thr Phe Glu Phe Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg
 65 70 75 80
 Pro Cys Lys Tyr Lys Leu Lys Lys Ser Thr Ile Thr Phe Cys Val Thr
 85 90 95
 Cys Glu Asn Gln Ala Pro Val His Phe Val Gly Val Gly His Cys
 100 105 110

<210> 10
 <211> 312
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Gln1Ser substitution
(recombinant RaPLR1 Q1S)

<220>

<221> CDS

<222> (1)..(312)

<223> RaPLR1 Q1S

<400> 10

tca gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg gat	48
Ser Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp	
1 5 10 15	

ggt gac tgt aat aat atc atg tca aca aac ttg ttc cac tgc aag gac	96
Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys Asp	
20 25 30	

aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc tgt	144
Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys	
35 40 45	

aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt tat	192
Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr	
50 55 60	

ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta aag	240
Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys	
65 70 75 80	

aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca gta	288
Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val	
85 90 95	

cat ttc gtg ggt gtc gga cat tgc	312
His Phe Val Gly Val Gly His Cys	
100	

<210> 11

<211> 104

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Gln1Ser substitution
(recombinant RaPLR1 Q1S)

<400> 11

Ser Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg Asp	
1 5 10 15	

Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys Asp	
20 25 30	

Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile Cys	
35 40 45	

Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe Tyr	
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50 55 60
 Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu Lys
 65 70 75 80
 Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro Val
 85 90 95
 His Phe Val Gly Val Gly His Cys
 100

<210> 12
 <211> 315
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 ribonuclease with Met at position 1 and Gln2Ser
 substitution (recombinant Met(-1) RaPLR1 Q1S)

<220>
 <221> CDS
 <222> (1)..(315)
 <223> Met(-1) RaPLR1 Q1S

<400> 12
 atg tca gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg 48
 Met Ser Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
 1 5 10 15
 gat gtt gac tgt aat aat atc atg tca aca aac ttg ttc cac tgc aag 96
 Asp Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys
 20 25 30
 gac aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc 144
 Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
 35 40 45
 tgt aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt 192
 Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe
 50 55 60
 tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta 240
 Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
 65 70 75 80
 aag aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca 288
 Lys Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
 85 90 95
 gta cat ttc gtg ggt gtc gga cat tgc 315
 Val His Phe Val Gly Val Gly His Cys
 100 105

<210> 13
 <211> 105
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana pipiens
ribonuclease with Met at position 1 and Gln2Ser
substitution (recombinant Met(-1) RaPLR1 Q1S)

<400> 13

Met	Ser	Asp	Trp	Leu	Thr	Phe	Gln	Lys	Lys	His	Leu	Thr	Asn	Thr	Arg
1				5				10					15		
Asp	Val	Asp	Cys	Asn	Asn	Ile	Met	Ser	Thr	Asn	Leu	Phe	His	Cys	Lys
			20					25					30		
Asp	Lys	Asn	Thr	Phe	Ile	Tyr	Ser	Arg	Pro	Glu	Pro	Val	Lys	Ala	Ile
		35					40					45			
Cys	Lys	Gly	Ile	Ile	Ala	Ser	Lys	Asn	Val	Leu	Thr	Thr	Ser	Glu	Phe
	50					55				60					
Tyr	Leu	Ser	Asp	Cys	Asn	Val	Thr	Ser	Arg	Pro	Cys	Lys	Tyr	Lys	Leu
	65				70					75					80
Lys	Lys	Ser	Thr	Asn	Thr	Phe	Cys	Val	Thr	Cys	Glu	Asn	Gln	Ala	Pro
				85					90					95	
Val	His	Phe	Val	Gly	Val	Gly	His	Cys							
			100					105							

<210> 14

<211> 330

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana oocyte ribonuclease (RaCOR1) synthetic
gene modified to use E. coli preferred codons

<220>

<221> CDS

<222> (1)..(330)

<223> RaCOR1 for E. coli expression system

<400> 14

cag	aac	tgg	gct	act	ttc	cag	cag	aaa	cat	atc	atc	aac	act	ccg	atc	48
Gln	Asn	Trp	Ala	Thr	Phe	Gln	Gln	Lys	His	Ile	Ile	Asn	Thr	Pro	Ile	
1				5				10					15			
atc	tgc	aac	act	atc	atg	gac	aac	aac	atc	tac	atc	gtt	ggt	ggt	cag	96
Ile	Cys	Asn	Thr	Ile	Met	Asp	Asn	Asn	Ile	Tyr	Ile	Val	Gly	Gly	Gln	
			20					25					30			
tgc	aaa	cgt	gtt	aac	act	ttc	atc	atc	tct	tct	gct	act	act	gtt	aaa	144
Cys	Lys	Arg	Val	Asn	Thr	Phe	Ile	Ile	Ser	Ser	Ala	Thr	Thr	Val	Lys	
		35					40					45				
gct	atc	tgc	act	ggt	gtt	atc	aac	atg	aac	gtt	ctg	tct	act	act	cgt	192
Ala	Ile	Cys	Thr	Gly	Val	Ile	Asn	Met	Asn	Val	Leu	Ser	Thr	Thr	Arg	
	50					55					60					

ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc 240
Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
65 70 75 80

ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa 288
Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
85 90 95

aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 330
Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
100 105 110

<210> 15
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana oocyte ribonuclease (RaCOR1) synthetic
gene modified to use E. coli preferred codons

<400> 15
Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
1 5 10 15
Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
20 25 30
Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
35 40 45
Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
50 55 60
Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
65 70 75 80
Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
85 90 95
Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
100 105 110

<210> 16
<211> 333
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease with Met at position 1
(recombinant Met(-1) RaCOR1)

<220>
<221> CDS
<222> (1)..(333)
<223> Met(-1) RaCOR1

<400> 16

atg	cag	aac	tgg	gct	act	ttc	cag	cag	aaa	cat	atc	atc	aac	act	ccg	48
Met	Gln	Asn	Trp	Ala	Thr	Phe	Gln	Gln	Lys	His	Ile	Ile	Asn	Thr	Pro	
1				5					10					15		

atc	atc	tgc	aac	act	atc	atg	gac	aac	aac	atc	tac	atc	gtt	ggg	ggg	96
Ile	Ile	Cys	Asn	Thr	Ile	Met	Asp	Asn	Asn	Ile	Tyr	Ile	Val	Gly	Gly	
		20						25					30			

cag	tgc	aaa	cgt	gtt	acc	act	ttc	atc	atc	tct	tct	gct	act	act	gtt	144
Gln	Cys	Lys	Arg	Val	Thr	Thr	Phe	Ile	Ile	Ser	Ser	Ala	Thr	Thr	Val	
		35					40					45				

aaa	gct	atc	tgc	act	ggg	gtt	atc	aac	atg	aac	gtt	ctg	tct	act	act	192
Lys	Ala	Ile	Cys	Thr	Gly	Val	Ile	Asn	Met	Asn	Val	Leu	Ser	Thr	Thr	
	50					55					60					

cgt	ttc	cag	ctg	aac	act	tgc	act	cgt	act	tct	atc	act	ccg	cgt	ccg	240
Arg	Phe	Gln	Leu	Asn	Thr	Cys	Thr	Arg	Thr	Ser	Ile	Thr	Pro	Arg	Pro	
65					70					75				80		

tgc	ccg	tac	tct	tct	cgt	act	gaa	act	aac	tac	atc	tgc	gtt	aaa	tgc	288
Cys	Pro	Tyr	Ser	Ser	Arg	Thr	Glu	Thr	Asn	Tyr	Ile	Cys	Val	Lys	Cys	
				85					90					95		

gaa	aac	cag	tac	ccg	gtt	cat	ttc	gct	ggg	atc	ggg	cgt	tgc	ccg		333
Glu	Asn	Gln	Tyr	Pro	Val	His	Phe	Ala	Gly	Ile	Gly	Arg	Cys	Pro		
		100						105					110			

<210> 17

<211> 111

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease with Met at position 1
(recombinant Met(-1) RaCOR1)

<400> 17

Met	Gln	Asn	Trp	Ala	Thr	Phe	Gln	Gln	Lys	His	Ile	Ile	Asn	Thr	Pro
1				5					10					15	

Ile	Ile	Cys	Asn	Thr	Ile	Met	Asp	Asn	Asn	Ile	Tyr	Ile	Val	Gly	Gly
		20						25					30		

Gln	Cys	Lys	Arg	Val	Thr	Thr	Phe	Ile	Ile	Ser	Ser	Ala	Thr	Thr	Val
		35					40					45			

Lys	Ala	Ile	Cys	Thr	Gly	Val	Ile	Asn	Met	Asn	Val	Leu	Ser	Thr	Thr
	50					55					60				

Arg	Phe	Gln	Leu	Asn	Thr	Cys	Thr	Arg	Thr	Ser	Ile	Thr	Pro	Arg	Pro
65					70					75				80	

Cys	Pro	Tyr	Ser	Ser	Arg	Thr	Glu	Thr	Asn	Tyr	Ile	Cys	Val	Lys	Cys
				85					90					95	

Glu	Asn	Gln	Tyr	Pro	Val	His	Phe	Ala	Gly	Ile	Gly	Arg	Cys	Pro	
		100						105					110		

<210> 18
 <211> 330
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met22Leu and
 Met75Leu substitutions (recombinant RaCOR1
 Met22Leu Met57Leu)

<220>
 <221> CDS
 <222> (1)..(330)
 <223> RaCOR1 Met22Leu Met57Leu

```

<400> 18
cag aac tgg gct act ttc cag cag aaa cat atc atc aaa act ccg atc      48
Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Lys Thr Pro Ile
  1               5               10              15

atc tgc aac act atc ctg gac aac aac atc tac atc gtt ggt ggt cag      96
Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
              20              25              30

tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt aaa     144
Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
              35              40              45

gct atc tgc act ggt gtt atc aac ctg aac gtt ctg tct act act cgt     192
Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr Arg
              50              55              60

ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc     240
Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
              65              70              75              80

ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa     288
Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
              85              90              95

aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg             330
Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
              100              105              110

```

<210> 19
 <211> 110
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met22Leu and
 Met75Leu substitutions (recombinant RaCOR1
 Met22Leu Met57Leu)

```

<400> 19
Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Lys Thr Pro Ile

```

1 5 10 15
 Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30
 Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45
 Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr Arg
 50 55 60
 Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80
 Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95
 Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 20
 <211> 333
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1,
 Met23Leu and Met58Leu substitutions (recombinant
 Met(-1) RaCOR1 Met22Leu Met57Leu)

<220>
 <221> CDS
 <222> (1)..(333)
 <223> Met(-1) RaCOR1 Met22Leu Met57Leu

<400> 20
 atg cag aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg 48
 Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15

 atc atc tgc aac act atc ctg gac aac aac atc tac atc gtt ggt ggt 96
 Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30

 cag tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt 144
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45

 aaa gct atc tgc act ggt gtt atc aac ctg aac gtt ctg tct act act 192
 Lys Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr
 50 55 60

 cgt ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg 240
 Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80

 tgc ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc 288
 Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95

gaa aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 333
 Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 21
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1,
 Met23Leu and Met58Leu substitutions (recombinant
 Met(-1) RaCOR1 Met22Leu Met57Leu)

<400> 21
 Met Gln Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15
 Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45
 Lys Ala Ile Cys Thr Gly Val Ile Asn Leu Asn Val Leu Ser Thr Thr
 50 55 60
 Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
 65 70 75 80
 Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
 85 90 95
 Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 22
 <211> 117
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with (His)6 tag, Met at
 position 7, Met23Leu and Met58Leu substitutions
 (recombinant Met(-1) RaCOR1 Met22Leu Met57Leu- (His)6)

<400> 22
 His His His His His His Met Gln Asn Trp Ala Thr Phe Gln Gln Lys
 1 5 10 15
 His Ile Ile Asn Thr Pro Ile Ile Cys Asn Thr Ile Leu Asp Asn Asn
 20 25 30
 Ile Tyr Ile Val Gly Gly Gln Cys Lys Arg Val Asn Thr Phe Ile Ile
 35 40 45

Ser Ser Ala Thr Thr Val Lys Ala Ile Cys Thr Gly Val Ile Asn Leu
 50 55 60
 Asn Val Leu Ser Thr Thr Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr
 65 70 75 80
 Ser Ile Thr Pro Arg Pro Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn
 85 90 95
 Tyr Ile Cys Val Lys Cys Glu Asn Gln Tyr Pro Val His Phe Ala Gly
 100 105 110
 Ile Gly Arg Cys Pro
 115

<210> 23
 <211> 330
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Gln1Ser substitution
 (recombinant RaCOR1 Q1S)

<220>
 <221> CDS
 <222> (1)..(330)
 <223> RaCOR1 Q1S

<400> 23
 tca aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg atc 48
 Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
 1 5 10 15
 atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt cag 96
 Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30
 tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt aaa 144
 Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45
 gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act cgt 192
 Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
 50 55 60
 ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg tgc 240
 Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80
 ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc gaa 288
 Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95
 aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 330
 Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 24
 <211> 110
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Gln1Ser substitution
 (recombinant RaCOR1 Q1S)

<400> 24
 Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro Ile
 1 5 10 15
 Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly Gln
 20 25 30
 Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val Lys
 35 40 45
 Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr Arg
 50 55 60
 Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro Cys
 65 70 75 80
 Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys Glu
 85 90 95
 Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
 100 105 110

<210> 25
 <211> 333
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1
 and Gln2Ser substitution

<220>
 <221> CDS
 <222> ()..(333)
 <223> Met(-1) RaCOR1 Q1S

<400> 25
 atg tca aac tgg gct act ttc cag cag aaa cat atc atc aac act ccg 48
 Met Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
 1 5 10 15
 atc atc tgc aac act atc atg gac aac aac atc tac atc gtt ggt ggt 96
 Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
 20 25 30
 cag tgc aaa cgt gtt aac act ttc atc atc tct tct gct act act gtt 144
 Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
 35 40 45


```

aaa gct atc tgc act ggt gtt atc aac atg aac gtt ctg tct act act 192
Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
    50              55              60

cgt ttc cag ctg aac act tgc act cgt act tct atc act ccg cgt ccg 240
Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
    65              70              75              80

tgc ccg tac tct tct cgt act gaa act aac tac atc tgc gtt aaa tgc 288
Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
              85              90              95

gaa aac cag tac ccg gtt cat ttc gct ggt atc ggt cgt tgc ccg 333
Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
              100              105              110

```

<210> 26
 <211> 111
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease with Met at position 1
 and Gln2Ser substitution

```

<400> 26
Met Ser Asn Trp Ala Thr Phe Gln Gln Lys His Ile Ile Asn Thr Pro
  1              5              10              15

Ile Ile Cys Asn Thr Ile Met Asp Asn Asn Ile Tyr Ile Val Gly Gly
              20              25              30

Gln Cys Lys Arg Val Asn Thr Phe Ile Ile Ser Ser Ala Thr Thr Val
              35              40              45

Lys Ala Ile Cys Thr Gly Val Ile Asn Met Asn Val Leu Ser Thr Thr
  50              55              60

Arg Phe Gln Leu Asn Thr Cys Thr Arg Thr Ser Ile Thr Pro Arg Pro
  65              70              75              80

Cys Pro Tyr Ser Ser Arg Thr Glu Thr Asn Tyr Ile Cys Val Lys Cys
              85              90              95

Glu Asn Gln Tyr Pro Val His Phe Ala Gly Ile Gly Arg Cys Pro
              100              105              110

```

<210> 27
 <211> 2855
 <212> DNA
 <213> Rana pipiens

<220>
 <223> Rana pipiens ribonuclease (RaPLR1) Clone 5a1b cDNA
 insert

<220>
 <221> CDS

<222> (97)..(481)

<223> RaPLR1

<220>

<221> sig_peptide

<222> (97)..(165)

<400> 27

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atcagttgct catcgtttga ccaagttggt ttccatctga agcaatatat atatataatt 60
tctcttatat ataaaggcct gatcacgact tccaga atg ttt cca aaa ttc tca 114
                               Met Phe Pro Lys Phe Ser
                               1           5

ttt ctc ctg ata ttt gca gtt gtt ttg agt ctc act cat aag tcc tta 162
Phe Leu Leu Ile Phe Ala Val Val Leu Ser Leu Thr His Lys Ser Leu
                10                15                20

tgt caa gac tgg ctt acg ttt cag aag aag cac ctg aca aac acc cgg 210
Cys Gln Asp Trp Leu Thr Phe Gln Lys Lys His Leu Thr Asn Thr Arg
                25                30                35

gat gtt gac tgt aat aat atc atg tca aca aac ttg ttc cac tgc aag 258
Asp Val Asp Cys Asn Asn Ile Met Ser Thr Asn Leu Phe His Cys Lys
                40                45                50

gac aag aac act ttt atc tat tca cgt cct gag cca gtg aag gcc atc 306
Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro Glu Pro Val Lys Ala Ile
                55                60                65                70

tgt aaa gga att ata gcc tcc aaa aat gtg tta act acc tct gag ttt 354
Cys Lys Gly Ile Ile Ala Ser Lys Asn Val Leu Thr Thr Ser Glu Phe
                75                80                85

tat ctc tct gat tgc aat gta aca agc agg cct tgc aag tat aaa tta 402
Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg Pro Cys Lys Tyr Lys Leu
                90                95                100

aag aaa tca act aat aca ttt tgt gta act tgt gag aat caa gct cca 450
Lys Lys Ser Thr Asn Thr Phe Cys Val Thr Cys Glu Asn Gln Ala Pro
                105                110                115

gta cat ttc gtg ggt gtc gga cat tgc tagaaatatg tttgacaaca 497
Val His Phe Val Gly Val Gly His Cys
                120                125

gggatgtgat aagcagctgc aagaaattat tttgaagtga atttactaaa gacactaatt 557
ttgcataaat tttccccaga gcttaccggt agtaagaaaa ttccaacagg gagccaagca 617
cagaaagtaa actaaggagc caaagtaatt ataaaagtca cactggaccg ctgctactgc 677
actcagatga ccaaattgaga aacagacaaa aacagcagag ttgggaagcg cagatccggg 737
aggtggcggg gagtcaattg gggatggagt ccatgtgaga tttggaaccg tttgttgctg 797
gtgaagcatg tggccggtgc acagtacaca tggggaaaga tagtcggatt ggccgggctc 857
gctgtggtgg tgccggcggt tgagccaaag gtggtgggga gatggctgtc ccccttctg 917
tgggggctgt ggacagaggg agctgcggac caggggtggg aggcctggag agaattttca 977
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aacagctgac gtggccgggg ctgggcagca tcggggaggg gaagggctgg gctcagatcc 1037
 aggaagcatg gtcactgtat gaccagagtg gaagatggca gagccgctgc agtggccggg 1097
 gagaccagag ggatctgtgc ccagcctttc ccctccctga tgtggcccgt ttttggttat 1157
 ggtaaccgct ccagctgtt tgggggtgtt ttcgggcttc gcatttttgg tctgcggctc 1217
 cctctgtcca cggccctcat ggaggggggg tgggcatttc tccaccgctt ttggctctgt 1277
 tgctggcact gtcgcagcga gtttgccag tcatggctca ttttccatt tgtcatgtgt 1337
 gttggttgca tgttttgcg gcggtggact gttttgaatt tcacatggat tccatcttcg 1397
 gttggttctt tgccacctcc tggatctgtg ctttccaatt ctgttttttc ccagcgctt 1457
 agtggatgca gtgaaactct ggtgattacc atcatccaat catgtgcaag aaaaaatatt 1517
 ttcataatttc ttccacccaa ttgggtattc attaggaagt ttgagcacat tcacgttcta 1577
 gggaaaatga gtgcaactgc acttccaaag ttcacagtct atttgccttt agtaaatcca 1637
 cccattatt tctgagcaga ggacaaatct atggcaacaa aaaaacttta cctactgaat 1697
 tattttatat tgattgaaga taatctttct ttcatttctt aaatattgta atcaaaatta 1757
 atacataaca gctatgtatt ataccacagc agcaaatgtt aaaatagttt taaacgtaaa 1817
 atatgtttta ccttaaagtg gaagtaaact tctatcacta aattttacct ataggtgaga 1877
 cccatgcgct cttcaggaat ggccgctggt gctgttctt cagagccctg tgctgcgaac 1937
 ggcggctccc gtgtgcatgt acaggagtga cgtcatcaca gtcgggcca gtcacagagt 1997
 tagagttcaa gtgtgagtgg cttgagccac gatgatgtcg ctcccaaaca tgtgtgcggg 2057
 ggtctccgtt tgcggcgcag gacactgggg gaatagcatg ggtgtgccgt tccttcagag 2117
 catatgcgtg ggtgacgtca ctagctgcat cttaaagtaat atctcctaaa caatgcacat 2177
 ttaggagata gttacagtac ctatgggtaa gccttattgt aggcttacct ataggtaaaa 2237
 atcatgcatg ggagtttact tccatgtagg gatgaggaga gcaggctgac atattaaagt 2297
 aaaaatctta cctatgtagg gatgaggaga gcaggctgac atattaaagt aaaaatctta 2357
 cctatagtgg ttgaaagtag ttgaaaataa gatggcctgc agggctctta aaaggctagg 2417
 atagcacagt atccacatga ggcaccagat ctgcctcccc cacacatgag tagcaaggag 2477
 caatggtaat gtgagtttct taggctcgac cgttaaatac cgttggccct ccaagtgata 2537
 catgggagat aagcagatgt ccgcgtatgc acgcagacat atgtgggcgg atgttgggat 2597
 aggacgatca gagagatgct cagatctgcc cgaaggagaa aggtggaaac atccattcaa 2657
 tgtcatatgc ctaaagaagc caccacccat aaaaagttaa tagatcatca ggtggcagcc 2717
 aaccacacca ggcccaaagg aggggtggccc cagtgaaccg tataggaaca gactcagct 2777

atcacataat tacacaagag tatagagacc cattgtgggt attaacaacc aaatggctaa 2837

aaaaaaaaaa aaaaaaaaaa

2855

<210> 28
<211> 127
<212> PRT
<213> Rana pipiens

<400> 28
Met Phe Pro Lys Phe Ser Phe Leu Leu Ile Phe Ala Val Val Leu Ser
1 5 10 15
Leu Thr His Lys Ser Leu Cys Gln Asp Trp Leu Thr Phe Gln Lys Lys
20 25 30
His Leu Thr Asn Thr Arg Asp Val Asp Cys Asn Asn Ile Met Ser Thr
35 40 45
Asn Leu Phe His Cys Lys Asp Lys Asn Thr Phe Ile Tyr Ser Arg Pro
50 55 60
Glu Pro Val Lys Ala Ile Cys Lys Gly Ile Ile Ala Ser Lys Asn Val
65 70 75 80
Leu Thr Thr Ser Glu Phe Tyr Leu Ser Asp Cys Asn Val Thr Ser Arg
85 90 95
Pro Cys Lys Tyr Lys Leu Lys Lys Ser Thr Asn Thr Phe Cys Val Thr
100 105 110
Cys Glu Asn Gln Ala Pro Val His Phe Val Gly Val Gly His Cys
115 120 125

<210> 29
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:CAAX motif to
target heterologous proteins to the plasma
membrane, where A = aliphatic amino acid and
X = Ser, Met, Cys, Ala or Gln

<400> 29
Cys Val Ile Met
1

<210> 30
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana pipiens
Onconase degenerate forward primer

<400> 30
 agrgatg tkg attgygataa yatcatg 27

<210> 31
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana pipiens
 Onconase degenerate reverse primer

<400> 31
 aaartgmacw ggkgcctgrt tytcaca 27

<210> 32
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease synthetic gene (RaCOR1)
 oligonucleotide

<400> 32
 cagaactggg ctactttcca gcagaaacat atcatcaaca ctccgatcat ctgcaacact 60
 atcatggaca acaacatcta catcgttggt ggtcag 96

<210> 33
 <211> 86
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease synthetic gene (RaCOR1)
 oligonucleotide

<400> 33
 tacatcgttg gtggtcagtg caaacgtgtt aacactttca tcatctctct gctactactg 60
 ttaaactgtat ctgcactggt gttatc 86

<210> 34
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Rana
 catesbeiana ribonuclease synthetic gene (RaCOR1)
 oligonucleotide

<400> 34
 atctgcactg gtgttactaa catgaacgtt ctgtctacta ctcgtttcca gctgaacact 60

tgcaactcgta cttctatcac tccgcgtccg tgccccg

96

<210> 35
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 35
gttgataaca ccagtgcaga t

21

<210> 36
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 36
atctgcactg gtgttatcaa c

21

<210> 37
<211> 95
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 37
actccgcgtc cgtgcccgtg ctcttctcgt actgaaacta actacatctg cgttaaactgc 60
gaaaaccagt acccggttca tttcgctggt atcgg

95

<210> 38
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 38
atatatctag aaataatttt atttaacttt aagaaggaga tatacatatg cagaactggg 60

ctactttcca g

71

<210> 39
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 39
cgcgccggat ccctactacg ggcaacgacc gataccagcg aaatgaac

48

<210> 40
<211> 96
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 40
cagaactggg ctactttcca gcagaaacat atcatcaaca ctccgatcat ctgcaacact 60
atcctgcaga acaacatcta catcgttggt ggtcag

96

<210> 41
<211> 96
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana ribonuclease synthetic gene (RaCOR1)
oligonucleotide

<400> 41
atctgcactg gtgttatcaa cctgaacgtt ctgtctacta ctcgtttcca gctgaacact 60
tgcactcgta cttctatcac tccgcgtccg tgcccg

96

<210> 42
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Rana
catesbeiana insertion primer for NdeI restriction
site

<400> 42
ggattccata tgcaactg ggctattttc cag

33

<210> 43

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:six histidine
residue tag at amino terminus

<400> 43

His His His His His His

1

5